

Claims

1. A pressure regulating valve for use in an aerosol spray can having a spray valve (12; 202), in which the pressure regulating valve (14; 200) lowers a pressure level, prevailing in the compressed-gas-filled interior of the can, to a regulation pressure level at which the spray valve (12; 202) operates, and the pressure regulating valve (14; 200) has a regulating piston (52), which is guided in a housing (48, 60) and is kept in equilibrium between a pressure, acting on the piston face in a pressure regulation chamber (84) and a restoring force, and between the regulating piston (52) and the housing (48, 60), a sealing point (66, 68; 67, 69) is provided, which is closed at a pressure in the pressure regulation chamber (84) above the regulation pressure level, characterized in that a sealing means (86, 66; 67) is provided, which seals off a free end of the piston (52, 74), remote from the pressure regulation chamber (84), from the internal pressure of the can and the regulated pressure, so that the pressures acting on axial faces on the free end of the piston (52) are independent of the level of the internal pressure of the can.

2. The pressure regulating valve of claim 1, characterized in that the sealing point (66, 68; 67, 69) is provided in a middle region of the regulating piston (52), which at that point preferably has an annular groove (78).

3. The pressure regulating valve of claim 2, characterized in that the pressure regulation chamber (84) communicates with the sealing point (66, 68; 67, 69) via openings (80, 82) in the piston (52).

4. The pressure regulating valve of claim 2 or 3,

characterized in that the piston shaft (52, 74, 76) is sealed off from the cylindrical housing (48, 60) on both sides of the sealing point (66, 68; 67, 69), and on one side of the sealing point, a first seal (86) is provided as part of the sealing means on the free end.

5. The pressure regulating valve of claim 4, characterized in that the sealing of the piston shaft (74, 76) from the cylindrical housing (48, 60) is effected with O-rings (86, 94), which are disposed in grooves (88, 96).

6. The pressure regulating valve of claim 5, characterized in that the grooves (88, 96) are embodied as wider than the respective O-ring (86, 94).

7. The pressure regulating valve of claim 6, characterized in that the width of the grooves (88, 96) is selected such that the O-ring (86, 94), in the adjusting region of the piston (52), rolls essentially without friction on the bottom of the groove and the opposite sealing face of the outsides of the piston and insides of the cylinder (48, 60).

8. The pressure regulating valve of one of the foregoing claims, characterized in that the restoring force is built up by means of a restoring spring which is disposed in a closed chamber (89) that is sealed off by the first seal (86).

9. The pressure regulating valve of claim 8, characterized in that a spacer sleeve or disk (491) for adjusting the spring prestressing force can be disposed in the closed chamber (89).

10. The pressure regulating valve of one of the foregoing claims, characterized in that between the piston (52) and the housing (30, 58), at least in one direction

of motion, an axial stop (92, 106) is provided for limiting the mobility of the piston (52).

11. The pressure regulating valve of one of the foregoing claims, characterized in that the piston diameter, viewed from the sealing point (66, 68; 67, 69), is embodied differently in the two axial directions.

12. The pressure regulating valve of one of the foregoing claims, characterized in that in the region of the sealing point, an annular disk-like sealing element (66; 67) or an O-ring-like sealing element (466) is provided, which is fixed on the piston or the housing (48; 56, 64) and cooperates sealingly with a shoulder (68; 468) or a face (69) on the housing or on the piston (52, 76), if the pressure in the pressure regulation chamber (84) exceeds the regulated pressure level.

13. The pressure regulating valve of claim 11 and/or claim 12, characterized in that the cylindrical housing (50) has two parts (48, 60) with optionally different inside diameters adapted to the piston diameters, and between them the sealing element (66; 67; 466) is fixed.

14. The pressure regulating valve of claim 13, characterized in that in the region of contact with the sealing element (466) and at least one of the two parts (56, 412) that fix the sealing element (466), a narrow annular ridge or protrusion (401, 403) for attaining a linear sealing action is provided.

15. The pressure regulating valve of claim 11 or 12, characterized in that the O-ring- or annular disk-like sealing element (66; 67; 466) protrudes radially inward into the annular groove (78) in the piston (52).

16. The pressure regulating valve of one of the

foregoing claims, characterized in that the housing part (56, 60), for receiving the free end (74, 92) of the piston, is surrounded by a cuplike housing part (98), which forms one part of the connection of the can interior to the sealing point (66, 68; 67, 69).

17. The pressure regulating valve of one of claims 1- 15, characterized in that the sealing point (66, 68; 67, 69) is connected to the can interior by a neck (114) integrally formed onto or attached to the housing (112).

18. The pressure regulating valve of one of the foregoing claims, characterized in that it has a neck (214), an insertion sleeve or the like, with the aid of which it can be connected to a neck (208) of a spray valve (202) either directly or by using a hoselike or tubular piece (210).

19. The pressure regulating valve of one of the foregoing claims, characterized in that on its outlet side toward the spray valve (12; 202), an overpressure valve (34) is provided, which above a predetermined limit pressure opens a cross section for supplying gas to the aerosol can.

20. The pressure regulating valve of one of the foregoing claims, characterized in that between the pressure regulation chamber (84) and the spray valve (12; 202), a throttle restriction (385; 485) is provided.

21. The pressure regulating valve of one of the foregoing claims, characterized in that the pressure regulation chamber (84) is located on the side of the piston remote from the spray valve (12; 202), and a connecting conduit (39) that bypasses the piston laterally connects the pressure regulation chamber (84) with the spray valve (12; 202).

22. An aerosol can having a spray valve (12; 202) and a pressure regulating valve (14; 200), preceding the spray valve, of one of the foregoing claims.

23. A valve unit to be built into an aerosol spray can, characterized in that a spray valve (12) and a pressure regulating valve (14) of one of claims 1-17 are embodied as a preassembled unit (10).